

**WHAT IS CLAIMED IS:**

1. A multichip module comprising:

a frame having contacts suitable for making an electrical connection with an article;

a multilayer thin film structure mounted to the frame; and

a plurality of semiconductor devices mounted to the thin film structure with at least one semiconductor device on each of two opposed surfaces of the thin film structure;

the thin film structure comprising (i) a first array of pads on a first surface of the thin film structure for connection to at least one semiconductor device, (ii) a second array of pads on an opposed surface of the thin film structure for connection to at least a second semiconductor device, (iii) a third array of pads on a surface of the thin film structure and proximate to the periphery of the thin film structure for connection between the thin film structure and the frame and (iv) wiring within the thin film structure for connecting between the first and second array of pads and for connecting between the thin film structure and the third array of pads.

2. The multichip module of claim 1 wherein the wiring in the thin film structure comprises power and ground plans.

3. The multichip module of claim 1 further comprising a stiffening material between the frame and at least one of the chips.

4. The multichip module of claim 1 wherein the wiring between the first and second array of pads is direct and of low inductance.

5. The multichip module of claim 1 wherein the thin film structure connects the semiconductor devices to the next level of packaging.

6. The multichip module of claim 1 wherein the frame contacts are selected from the group consisting of TAB, conductive adhesive, solder ball grid array and wire bonded.

7. The multichip module of claim 1 wherein the semiconductor devices are mounted to the thin film structure by TAB bonding, conductive adhesive bonding, controlled collapse chip control (C4) bonding or wire bonding.

8. The multichip module of claim 1 further comprising a heat sink in contact with at least one of the plurality of semiconductor devices.

9. The multichip module of claim 1 wherein the frame comprises an open area through which at least one semiconductor device is exposed.

10. The multichip module of claim 1 wherein the frame comprises an electrically insulating material.

11. The multichip module of claim 10 wherein the electrically insulating material comprises a ceramic or organic material.

12. The multichip module of claim 1 further comprising a heat sink.

13. The multichip module of claim 1 further comprising at least one passive component on one of the opposed surfaces of the thin film structure.

14. The multichip module of claim 1 wherein a signal path between semiconductor devices on the opposed surfaces of the thin film structure is on the order of the thickness of the thin film structure.

15. A method of forming a multichip module comprising the steps of:

forming a thin film structure on a temporary carrier;

attaching an electrically insulating frame to a first surface of the thin film structure;

attaching at least one semiconductor device to the first surface of the thin film structure;

removing the temporary carrier; and

attaching at least one semiconductor device to a second surface of the thin film structure, wherein the first surface is opposed to the second surface and wherein

there is interconnectivity through the thin film structure between the semiconductor devices and the frame.

16. The method of claim 15 wherein the frame comprises an open area through which at least one semiconductor device is exposed.

17. The method of claim 15 further comprising the step of applying a stiffening material between the frame and one of the at least one semiconductor devices.